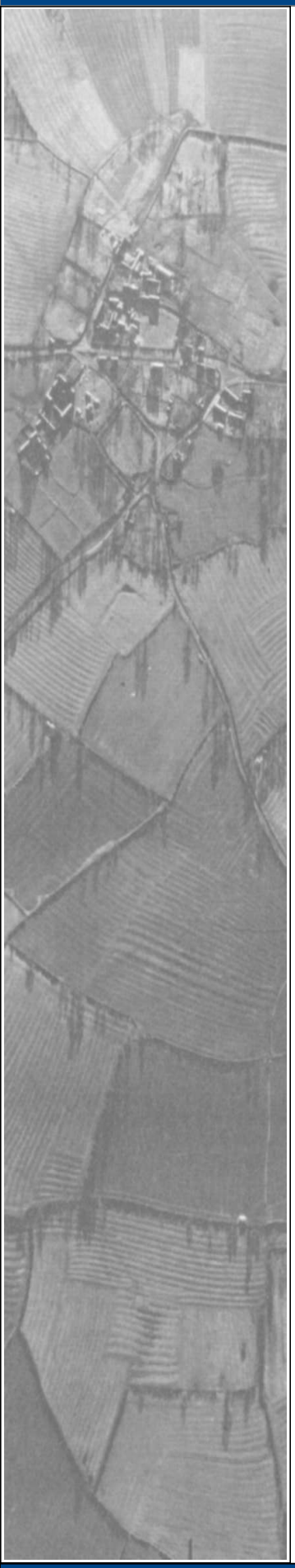

Hinton Park Woodland Burial Ground Extension
Bransgore
Hampshire

MAGNETOMETER SURVEY REPORT

for

Pegasus Group

on behalf of

The Co-operative Group

Kerry Donaldson & David Sabin

October 2021

Ref. no. J877

ARCHAEOLOGICAL SURVEYS LTD

Hinton Park Woodland Burial Ground Extension
Bransgore
Hampshire

MAGNETOMETER SURVEY REPORT

for

Pegasus Group

on behalf of

The Co-operative Group

Fieldwork by David Sabin BSc (Hons) MCIfA
Report by Kerry Donaldson BSc (Hons)
Report checked by David Sabin
Primary archive location - Archaeological Surveys Ltd, Yatesbury, Wiltshire

Survey dates – 21st & 22nd September 2021
Ordnance Survey Grid Reference – **SZ 22235 95315**

Archaeological Surveys Ltd
1 West Nolands, Nolands Road, Yatesbury, Calne, Wiltshire, SN11 8YD
Tel: 01249 814231 Fax: 0871 661 8804
Email: info@archaeological-surveys.co.uk
Web: www.archaeological-surveys.co.uk

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SUMMARY

A detailed magnetometer survey was carried out by Archaeological Surveys Ltd ahead of a proposed extension to the Hinton Park Woodland Burial Ground into adjacent agricultural land. The results of the survey indicate the presence of a number of rectilinear enclosures within two groups in the western and eastern parts of the site and associated anomalies may be indicative of occupation. Throughout the site are numerous discrete positive responses that relate to widespread naturally formed pits within the underlying gravels.

1 INTRODUCTION

1.1 Survey background

1.1.1 Archaeological Surveys Ltd was commissioned by Pegasus Group, on behalf of The Co-operative Group, to undertake a magnetometer survey of an area of land to the east of Hinton Park Woodland Burial Ground in Hampshire. The site has been outlined for a proposed extension to the woodland burial ground and the survey forms part of an archaeological assessment.

1.1.2 The geophysical survey was carried out in accordance with a Written Scheme of Investigation (WSI) produced by Archaeological Surveys (2021) and approved by Gareth Owen, Archaeologist for the New Forest National Park Authority, prior to commencing the fieldwork.

1.2 Survey objectives and techniques

1.2.1 The objective of the survey was to use magnetometry to locate geophysical anomalies that may be archaeological in origin so that they may be assessed prior to development of the site as a woodland burial ground. The methodology is considered an efficient and effective approach to archaeological prospection.

1.2.2 Geophysical survey can provide useful information on the archaeological potential of a site; however, the outcome of any survey relies on a number of factors and as a consequence results can vary. The success in meeting the aims and objectives of a survey is, therefore, often impossible to predetermine.

1.3 Standards, guidance and recommendations for the use of this report

1.3.1 The survey and report follow the recommendations set out by: European Archaeological Council (2015) *Guidelines for the Use of Geophysics in Archaeology;* Institute for Archaeologists (2002) *The use of Geophysical*

Techniques in Archaeological Evaluations. The work has been carried out to the Chartered Institute for Archaeologists (2014) *Standard and Guidance for Archaeological Geophysical Survey.*

1.3.2 Archaeological Surveys Ltd provide a detailed geophysical survey report and it is recommended that where possible the contents should be considered in full. The Summary provides a brief overview of the results with more detail available in the Discussion and/or Conclusion. The *List of anomalies* within the Results provides a detailed assessment of the anomalies within separate categories which can be useful in inferring a level of confidence to the interpretation. Quality and factors influencing the interpretation of anomalies is also set out within the results.

1.3.3 It is recommended that the full report should always be considered when using data and interpretation plots; where this is not possible, in the field for example, the abstraction and interpretation plots should retain their colour coding and be used with a corresponding legend.

1.3.4 Where targeting of anomalies by excavation is to be carried out, care should be taken to place trenches over solid lines or features visible on the abstraction and interpretation plots. Archaeological Surveys abstraction and interpretation avoids the use of dashed or dotted line formats, and broken or fragmented lines used in interpretive plots may well correspond closely with truncation of archaeological features.

1.4 Site location, description and survey conditions

1.4.1 The site is located within agricultural land immediately to the east of the Hinton Park Woodland Burial Ground, near Hinton, within the parish of Bransgore, Hampshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) SZ 22235 95315, see Figs 01 and 02.

1.4.2 The geophysical survey covers approximately 6.5ha within the northern part of a single grassland field. The site outlined for the woodland burial ground covers c5.4ha and is shown by the red-line boundary on the report figures and an additional 20m - 25m strip along the southern edge has also been surveyed to act as a buffer.

1.4.3 The area is generally flat although the eastern part slopes down gently towards the east and north east. The northern and western boundaries are formed by hedgerows with an area of woodland known as Walkford Moor Copse lying immediately to the east and north east. Walkford Brook runs through the woodland from north to south a short distance from the eastern limit of the survey area. A large electricity pylon is located in the central part of the northern boundary and several capped boreholes are located within the northern part of the site.

1.4.4 The ground conditions across the site were generally considered to be

favourable for the collection of magnetometry data. A very small zone of rough vegetation was unsurveyable at the extreme eastern end of the site. Survey was avoided within a zone of very high magnitude magnetic disturbance adjacent to the steel pylon and in close proximity to the borehole caps. During the survey a zone of very high magnitude magnetic disturbance indicative of an underground service was noted in the north western part of the site. Weather conditions during the survey were fine.

1.5 Site history and archaeological potential

1.5.1 An Archaeological Desk-Based Assessment has been carried out by Pegasus Group (2021) which outlines that historical aerial photographs show a low circular earthwork feature that relates to a conjectured Bronze Age burial mound within the south eastern part of the site. Fieldwalking has previously been carried out within the site and the finds included a number of struck flint and prehistoric, Roman, medieval and post medieval pottery. Within the wider area are several probable prehistoric cropmark enclosures. The 1838 tithe map indicates that the site was sub-divided into three fields which were amalgamated in the late 19th century and sub-divided again during the first half of the 20th century and then once again enlarged to become a single field in the 1990s.

1.6 Geology and soils

1.6.1 The underlying solid geology across the western part of the site is sand from the Becton Sand Formation and clay, silt and sand from the Headon Formation in the eastern part. The majority of the site has overlying River Terrace Deposits of sand and gravel with some alluvium in the far west (BGS, 2017).

1.6.2 The overlying soil across the survey area is from the Efford 1 association and is a typical argillic brown earth. This consists of a well drained, fine, loamy soil over marine and river terrace gravel (Soil Survey of England and Wales, 1983).

1.6.3 Magnetometry carried out over similar geology and soil has produced good results although there can be an association with naturally formed features which at times can be difficult to distinguish from those with an anthropogenic origin. The site is, therefore, considered suitable for magnetic survey.

2 METHODOLOGY

2.1 Technical synopsis

2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic

thermoremnance (also known as thermoremanence) are factors associated with the formation of localised fields.

2.1.2 Iron minerals within the soil may become altered by burning and the break down of biological material; effectively the magnetic susceptibility of the soil is increased, and the iron minerals become magnetic in the presence of the Earth's magnetic field. Accumulations of magnetically enhanced soils within features, such as pits and ditches, may produce magnetic anomalies that can be mapped by magnetic prospection.

2.1.3 Magnetic thermoremnance can occur when ferrous minerals have been heated to high temperatures such as in a kiln, hearth, oven etc. On cooling, a permanent magnetisation may be acquired due to the presence of the Earth's magnetic field. Certain natural processes associated with the formation of some igneous and metamorphic rock may also result in magnetic thermoremnance.

2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T). Additional details are set out in 2.2 below and within Appendix A.

2.2 Equipment configuration, data collection and survey detail

2.2.1 The detailed magnetic survey was carried out using a SENSYS MAGNETO®MXPDA 5 channel cart-based system. The instrument has 5 fluxgate gradiometers (FGM650) spaced 0.5m apart with readings recorded at 20Hz. The cart is pushed at walking speed and not towed. Each sensor is not zeroed in the field as the vertical axis alignment is precisely fixed leaving sensor offsets that are removed during data processing. The fixing of the vertical alignment ensures the sensors are not unduly influenced by localised magnetic fields and that the vertical component of a magnetic anomaly is measured. The gradiometers have a measurement range of ±8000nT, although the recorded range is ±3000nT, and resolution is around 0.1nT. They are linked to a Leica GS10 RTK GNSS with data recorded by SENSYS MAGNETO®MXPDA software on a rugged PDA computer system.

2.2.2 Due to the fixed offsets within the fluxgate sensors, as a result of the manufacturing and tensioning process, the survey data do not provide a visually useful dataset until a zero median traverse algorithm is applied. It is recognised that this has the potential to affect some anomalies detrimentally by removing linear features orientated parallel to survey transects. However, this has not been noted as a particular problem with the system due to the high resolution data collection, generally long length of traverses and variability within the magnetic characteristics of a linear anomaly.

2.2.3 Data are collected along a series of parallel survey transects to achieve 100% coverage of the surveyable land. The length of each transect is variable and relates to the size of the survey area and other factors including ground

conditions. A visual display allows accurate placing of transects and helps maintain the correct separation between adjacent traverses. Data are not collected within fixed grids and data points are considered to be random even though the data are collected in a systematic manner covering all accessible areas (Aspinall, Gaffney and Schmidt, 2009).

2.2.4 Fluxgate sensors are highly sensitive to temperature change and this manifests as drift during the course of a survey. This can be particularly noticeable during the morning as temperatures rise and the equipment warms or cools. Sensor drift within the course of a traverse will appear as a line trending from negative to positive after processing with a zero median traverse algorithm. To remove the potential for temperature drift, data were collected after a 20 minute stabilisation period and traverses were limited to a time of generally <100s.

2.3 Data processing and presentation

2.3.1 Magnetic data collected by the MAGNETO®MXPDA cart-based system are initially prepared using SENSYS MAGNETO®DLMGPS software. The software effectively allocates a geographic position for each data point and can compensate for fixed offsets present within the FGM650 sensors. The offsets are positive or negative values present on all fluxgate gradiometer sensors. Some systems use manual or electronic balancing to effectively zero the sensors; however, this is a short term measure that is prone to drift through temperature changes and vibration and can easily be incorrectly set due to localised magnetic fields. The FGM650 sensors are very accurately aligned to the vertical magnetic gradient and are highly stable showing negligible drift on long traverses. The offset values are removed using TerraSurveyor software.

2.3.2 Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display within TerraSurveyor. The removal of the offset values (compensation) of the sensors is also carried out in TerraSurveyor using a zero median traverse function. Data are then considered to be minimally processed. Note: without the zero median traverse function it is not possible to create a meaningful data plot as all sensors have a different offset value. Although a zero median traverse algorithm can remove anomalies aligned with the survey tracks, in practice this rarely occurs due to the use of long traverses, high resolution measurement and variability within the magnetic susceptibility of long linear features.

2.3.3 The minimally processed data are collected between limits of ±3000nT and clipped for display at ±3nT. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track.

2.3.4 Additional data processing has been carried out in the form of high pass filtering. This effectively removes low frequency variation along a traverse that has been caused by large magnetic bodies, cultivation or rapid temperature change. Data treated to additional processing have been compared to

unprocessed data to ensure that no significant anomalies have been removed.

2.3.5 Appendix C contains metadata concerning the survey and data attributes and is derived directly from TerraSurveyor. Reference should be made to Appendix B for further information on processing.

2.3.6 A TIF file is produced by TerraSurveyor software along with an associated world file (.TFW) that allows automatic georeferencing (OSGB36 datum) when using GIS or CAD software. The main form of data display used in the report is the minimally processed greyscale plot. With regard to the Sensys MXPDA, minimally processed data are considered by the manufacturer to be data that are compensated by SENSYS MAGNETO DLMGPS software, see 2.3.1 and 2.3.2. Note: traceplots are not considered to be appropriate as they do not provide an accurate or useful assessment of the magnetic anomalies due to the very high density of data collection. In addition, traceplots cannot be meaningfully plotted against base mapping and in areas of complexity traces may be lost or highly confused. Traceplots may be used to demonstrate characteristic magnetic profiles across discrete features where it is considered beneficial.

2.3.7 The raster images are combined with base mapping using ProgeCAD Professional 2021, creating DWG (2018) file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. The CAD plots are effectively georeferenced facilitating relocation of features using GNSS, resection method, etc.

2.3.8 An abstraction and interpretation is drawn and plotted for all geophysical anomalies located by the survey. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing. Appendix E sets out CAD layer names with colour and graphic content for each interpretation category, see 3.3.

2.3.9 A brief summary of each anomaly, with an appropriate reference number, is set out in list form within the results (Section 3) to allow a rapid and objective assessment of features within the survey area.

2.3.10 A digital archive is produced with this report, see Appendix D below. The main archive is held at the offices of Archaeological Surveys Ltd.

3 RESULTS

3.1 General assessment of survey results

3.1.1 The detailed magnetic survey was carried out over approximately 6.5ha within the northern part of a larger grassland field.

3.1.2 Magnetic anomalies located can be generally classified as positive responses

of archaeological potential, positive and negative anomalies of an uncertain origin, linear anomalies of an agricultural origin, anomalies with a natural origin, areas of magnetic disturbance, strong discrete dipolar anomalies relating to ferrous objects and strong multiple dipolar linear anomalies relating to buried services or pipelines.

3.1.3 Anomalies located within each survey area have been numbered and are described in 3.4 below.

3.2 Statement of data quality and factors influencing the interpretation of anomalies

3.2.1 Data are considered representative of the magnetic anomalies present within the site. There are no significant defects within the dataset.

3.2.2 High magnitude magnetic disturbance, associated with an underground service in the north western part of the site and a steel pylon in the northern boundary, has the potential to obscure anomalies of archaeological potential. It is likely that the full extent of linear features probably associated with enclosure ditches have been obscured by the underground service towards the western end of the survey area. Data have been subject to processing using a high pass filter in order to minimise the extent of the disturbance, especially along traverses where the sensor compensation has been affected. Both filtered and unfiltered data are assessed and analysed in order to ensure that the processing algorithm has not removed anomalies of archaeological potential.

3.2.3 The data demonstrate useful magnetic contrast within the soil, subsoil and underlying geology. Positive anomalies demonstrate contrasting magnetic susceptibility between the fill of former cut features and the surrounding natural material. Fading of anomalies in the far north eastern and eastern parts of the site may indicate less suitable conditions for magnetic enhancement possibly related to natural changes in the soil.

3.2.4 The survey area contains numerous and widespread discrete anomalies, many are somewhat oval in shape with a long axis of approximately 1m – 3m. It is likely that these are naturally formed shallow features possibly indicatIve of former tree throw pits; other more amorphous or linear anomalies may relate to former fluvial or periglacial features.

3.3 Data interpretation

3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A general explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, see Table 1.

Interpretation category	Description and origin of anomalies
Anomalies with archaeological potential	Anomalies have the characteristics (mainly morphological) of a range of archaeological features such as pits, ring ditches, enclosures, etc. The category is used where there is a high level of confidence which may be due to additional supporting information where morphology is unclear or uncharacteristic.
Anomalies with an uncertain origin	The category applies to a range of anomalies where there is not enough evidence to confidently suggest an origin. Anomalies in this category may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered. Morphology may be unclear or uncharacteristic and there may be a lack of additional supporting information. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies with an agricultural origin	The anomalies are often linear and form a series of parallel responses or are parallel to extant land boundaries. Where the response is broad, former ridge and furrow is likely; narrow response is often related to modern ploughing. This category does not include agricultural features of early date or considered to be of archaeological potential (e.g. animal stockades, enclosures, farmsteads, etc).
Anomalies associated with magnetic debris	Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc. Often a significant area around these features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.
Anomalies with a natural origin	Naturally formed magnetic anomalies are caused by localised variability in the magnetic susceptibility of soils, subsoils and other drift or solid geologies. Anomalies may be amorphous, linear or curvilinear and may appear 'fluvial' or discrete; the latter are almost impossible to distinguish from pit-like anomalies with an anthropogenic origin. Fluvial, glacial and periglacial processes may be responsible for their formation within drift material and subsoil. Igneous and metamorphic activity can lead to anomalies within more solid geology.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 422235 95315, see Figs 03 – 09.

Anomalies of archaeological potential

(1) – Rectilinear anomalies are located in the south western part of the survey area. Their morphology is indicative of a series of enclosures, probably associated with agricultural fields, but an association with settlement is possible.

(2) – Positive rectilinear anomalies located to the north of, and at a different orientation to anomalies (1). They are likely to have been partly truncated by a gas pipeline, but their full extent is unclear due to the strongly magnetic disturbance caused by the pipe. A positive linear anomaly located 65m to the north east has a similar orientation and may be associated.

(3) – Located in the eastern part of the survey area is a positive rectilinear anomaly forming three sides of a square enclosure measuring 35m by 35m, although there is

no southern side to the enclosure visible in the data. The enclosure contains a number of pit-like anomalies, some of which have a response of 20-30nT which may be indicative of an association with burning. Other pit-like responses could relate to archaeological features, but may relate to naturally formed pits.

(4) – A positive rectilinear anomaly contains smaller rectilinear, linear and discrete anomalies in the north eastern part of the site. These relate to an enclosure containing cut features and pits and/or areas of burning. The outer enclosure ditches have a variable response indicating material with different magnetic enhancement has become incorporated into them, especially along the northern section.

(5) – Approximately 10m to the west of enclosure (4) is a very weakly positive rectilinear anomaly. This could form a small square shaped enclosure; however, the majority of the responses are weak (1.5nT) and not clearly defined and are, therefore, of uncertain origin, but the south eastern corner is over 10nT, which may indicate that burnt material has become incorporated into it.

Anomalies with an uncertain origin

(6) – In the western part of the site, a weakly positive rectilinear anomaly could be associated with anomaly (2), but this is not certain.

(7) – A number of positive linear and curvilinear anomalies are located within the confines of the rectilinear enclosure (1) located in the south western corner of the site. While these anomalies could relate to cut features with archaeological potential, their morphology is unusual and an association with naturally formed features is possible.

(8) – A positive linear anomaly is located in the north western part of the site and appears to relate to a cut, ditch-like feature which could be of archaeological potential. However, it is parallel with the western field boundary and not with other anomalies of archaeological potential in the vicinity and a direct link cannot be clearly identified due to the widespread magnetic disturbance from the nearby gas pipeline.

(9 & 10) – A positive linear anomaly is located in the eastern part of the site (9). It is not clear if it relates to a cut feature with archaeological potential, or if it is associated with a formerly mapped 20th century field boundary. Another weakly positive linear appears to cross it (10) and again its archaeological potential cannot be determined.

Anomalies with a natural origin

(11) – Much of the survey area contains discrete positive responses. At times these can be difficult to distinguish from those with an anthropogenic origin, but the widespread and random distribution indicates that they are likely to be naturally formed soil-filled pits within the underlying geology/subsoil.

(12) – A number of positive linear anomalies can be seen in the south eastern part of the survey area. This type of response is usually associated with naturally formed features within the underlying gravels.

Anomalies with an agricultural origin

(13) – The survey area contains parallel linear anomalies oriented almost north to south which are associated with previous agricultural activity, possibly medieval strip cultivation.

Anomalies with a modern origin

(14) – A strong, multiple dipolar, linear anomaly crosses the north western part of the site and is a response to a buried gas pipeline. It has produced widespread magnetic disturbance that is likely to have obscured weaker anomalies in the vicinity.

4 CONCLUSION

4.1.1 The geophysical survey located a number of anomalies that relate to archaeological features within two main zones within the site. In the west are a number of rectilinear enclosures on two different orientations; however, strongly magnetic disturbance from a gas pipeline has partially obscured the full extent of some of the features. Located 265m to the east are a second group of archaeological features that relate to a square enclosure and a rectilinear enclosure, they appear to contain a number of linear and rectilinear ditches and pits or areas of burning that could relate to occupation.

4.1.2 The site also contains a number of weakly positive linear and discrete anomalies, and it is possible that they relate to further cut features, although they are generally indistinct or lack a coherent morphology. The site contains numerous and widespread discrete anomalies which are likely to relate to naturally formed pit-like features.

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Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremnant material. Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field. Thermoremnant magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

Enhancement of magnetic susceptibility can occur in areas subject to burning and complex fermentation processes on biological material; these are frequently associated with human settlement. Thermoremnant features include ovens, hearths, and kilns. In addition thermoremnant material such as tile and brick may also be associated with human activity and settlement.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil can create an area of enhancement compared with surrounding soils and subsoils into which the feature is cut. Mapping enhanced areas will produce linear and discrete anomalies allowing an assessment and characterisation of hidden subsurface features.

It should be noted that areas of negative enhancement can be produced from material having lower magnetic properties compared to the topsoil. This is common for many sedimentary bedrocks and subsoils which were often used in the construction of banks and walls etc. Mapping these 'negative' anomalies may also reveal archaeological features.

Magnetic survey or magnetometry can be carried out using a fluxgate gradiometer and may be referred to as gradiometry. The SENSYS gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 65cm apart. The instrument is carried about 10-20cm above the ground surface and the upper sensor measures the Earth's magnetic field as does the lower sensor but this is influenced to a greater degree by any localised buried magnetic field. The difference between the two sensors will relate to the strength of the magnetic field created by the buried feature.

There are a number of factors that may affect the magnetic survey and these include soil type, local geology and previous human activity. Situations arise where magnetic disturbance associated with modern services, metal fencing, dumped waste material etc., obscures low magnitude fields associated with archaeological features.

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

High Pass Filter

Removes low frequency anomalies within the data that are not considered to be archaeologically significant and may be natural in origin. A window passes over the data, the mean of all the data within the window is subtracted from the centre value. The size of the window is adjusted as is the weighting which may be uniform or Gaussian. The process is used to improve the visibility of anomalies of interest.

Zero Median/Mean Traverse

The median (or mean) of data from each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise differences between the offset values of the gradiometer sensors. The process can remove archaeological features that run along a traverse but with the high resolution datasets created by the Sensys FGM650 sensors and the method of data collection this has not been a notable problem. In fact, the removal of offsets using software avoids carrying out a balancing procedure on site, which inevitably can never be done in magnetically clean

conditions and results in improperly aligned fluxgate sensors and/or electronic adjustment values.

Appendix C – survey and data information

Minimally processed data

Filename: J877-mag-proc.xcp
Instrument Type: Sensys DLMGPS
Units:
UTM Zone: 30U
Survey corner coordinates (X/Y):OSGB36
Northwest corner: 421921.34, 95389.89 m
Southeast corner: 422547.29, 95258.49 m
Collection Method: Randomised
Sensors: 5
Dummy Value: 32702
Dimensions
Survey Size (meters): 626 m x 131 m
X&Y Interval: 0.45 m
Source GPS Points: Active: 1739495, Recorded: 1739495
Stats
Max: 3.23
Min: -3.30
Std Dev: 1.18
Mean: 0.04
Median: 0.01
Composite Area: 8.225 ha
Surveyed Area: 6.5267 ha

PROGRAM
Name: TerraSurveyorPre
Version: 3.0.36.24
GPS based Proce4
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 Clip from -3.00 to 3.00

Filtered data
Max: 3.32
Min: -3.30
Std Dev: 1.10
Mean: 0.04
Median: -0.01

GPS based Proce5
1 Base Layer.
2 Unit Conversion Layer (Lat/Long to UTM).
3 DeStripe Median Traverse:
4 High pass Uniform (median) filter: Window dia: 225
5 Clip from -3.00 to 3.00

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at their offices in Wiltshire. Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site. This allows for long-term storage including refreshing and migration of files so that they can be accessed for re-analysis in the future. The archive includes the raw and processed geophysical data, greyscale images, CAD, PDF figures and report text. In addition, digital data created during the survey can be provided on CD ROM or DVD to the client or HER or if it becomes a requirement the data can be archived with the Archaeology Data Service (ADS) at an additional cost to the client.

A PDF copy of the report will be issued to the Hampshire Historic Environment Record and also uploaded to the Online AccesS to the Index of archaeological investigationS (OASIS).

Archive contents:

File type	Naming scheme	Description
Data	J877-mag.asc J877-mag.xcp J877-mag-proc.xcp J877-mag-proc-hpf.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J877-mag-proc.tif J877-mag-proc-hpf.tif	Image in TIF format
Drawing	J877-**[version number]**.dwg	CAD file in 2018 dwg format
Report	J877 report.odt	Report text in LibreOffice odt format

Table 2: Archive metadata

Appendix E – CAD layers for abstraction and interpretation plots

The table below sets out Archaeological Surveys Ltd CAD layer names with associated colours and graphical content. Where CAD files are available layers may be extracted for further CAD/GIS use. Note: hatched polygon boundaries are contained within layers with the RGB colour code 254, 255, 255 (near white) in order to prevent their visibility.

Report sub-heading and associated CAD layer names	Colour with RGB index		Layer content
Anomalies with archaeological potential			
AS-ABST MAG POS DISCRETE ARCHAEOLOGY		Red 255,0,0	Solid donut, point or polygon (solid)
AS-ABST MAG POS LINEAR ARCHAEOLOGY		Red 255,0,0	Polyline or polygon (solid)
AS-ABST MAG POS ENCLOSURE DITCH		127,0,255	Line, polyline or polygon (solid)
Anomalies with an uncertain origin			
AS-ABST MAG POS LINEAR UNCERTAIN		255,127,0	Line, polyline or polygon (solid)
AS-ABST MAG NEG LINEAR UNCERTAIN		Blue 0,0,255	Line, polyline or polygon (solid)
AS-ABST MAG POS DISCRETE UNCERTAIN		255,127,0	Solid donut, point or polygon (solid)
Anomalies with an agricultural origin			
AS-ABST MAG AGRICULTURAL		Green 0,255,0	Line or polyline
Anomalies associated with magnetic debris			
AS-ABST MAG STRONG DIPOLAR		132, 132, 132	Solid donut, point or polygon (solid)
Anomalies with a modern origin			
AS-ABST MAG DISTURBANCE		132, 132, 132	Polygon (hatched ANSI31)
AS-ABST MAG SERVICE		132, 132, 132	Line or polyline
Anomalies with a natural origin			
AS-ABST MAG NATURAL FEATURES		Yellow 255,255,0	Polygon (cross hatched ANSI37)

Table 3: CAD layering

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www.archaeological-surveys.co.uk
info@archaeological-surveys.co.uk
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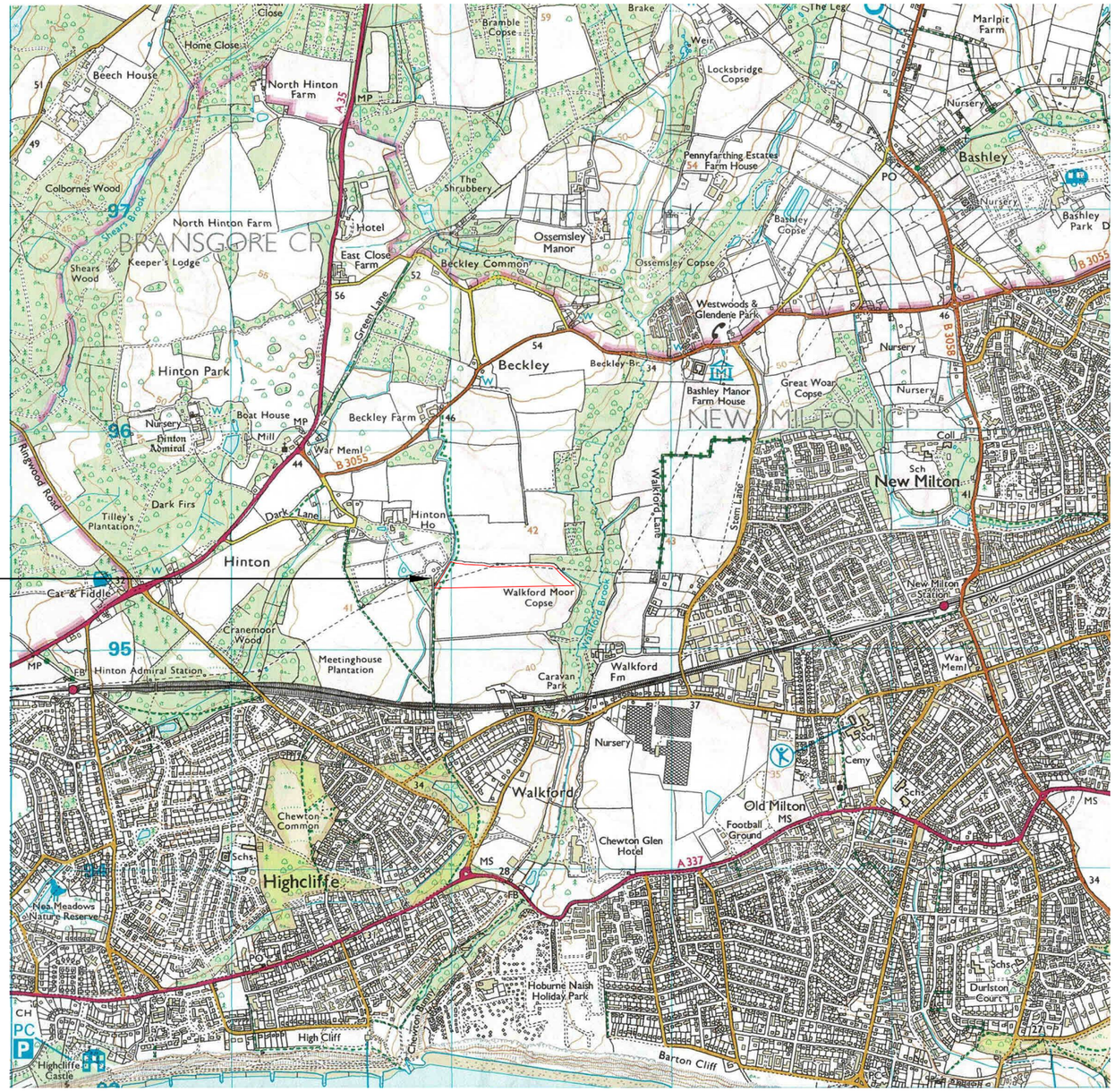
Specialist Geophysical Surveyors

Geophysical Survey
Hinton Park Woodland
Burial Ground Extension
Bransgore
Hampshire

Map of survey area



Survey location

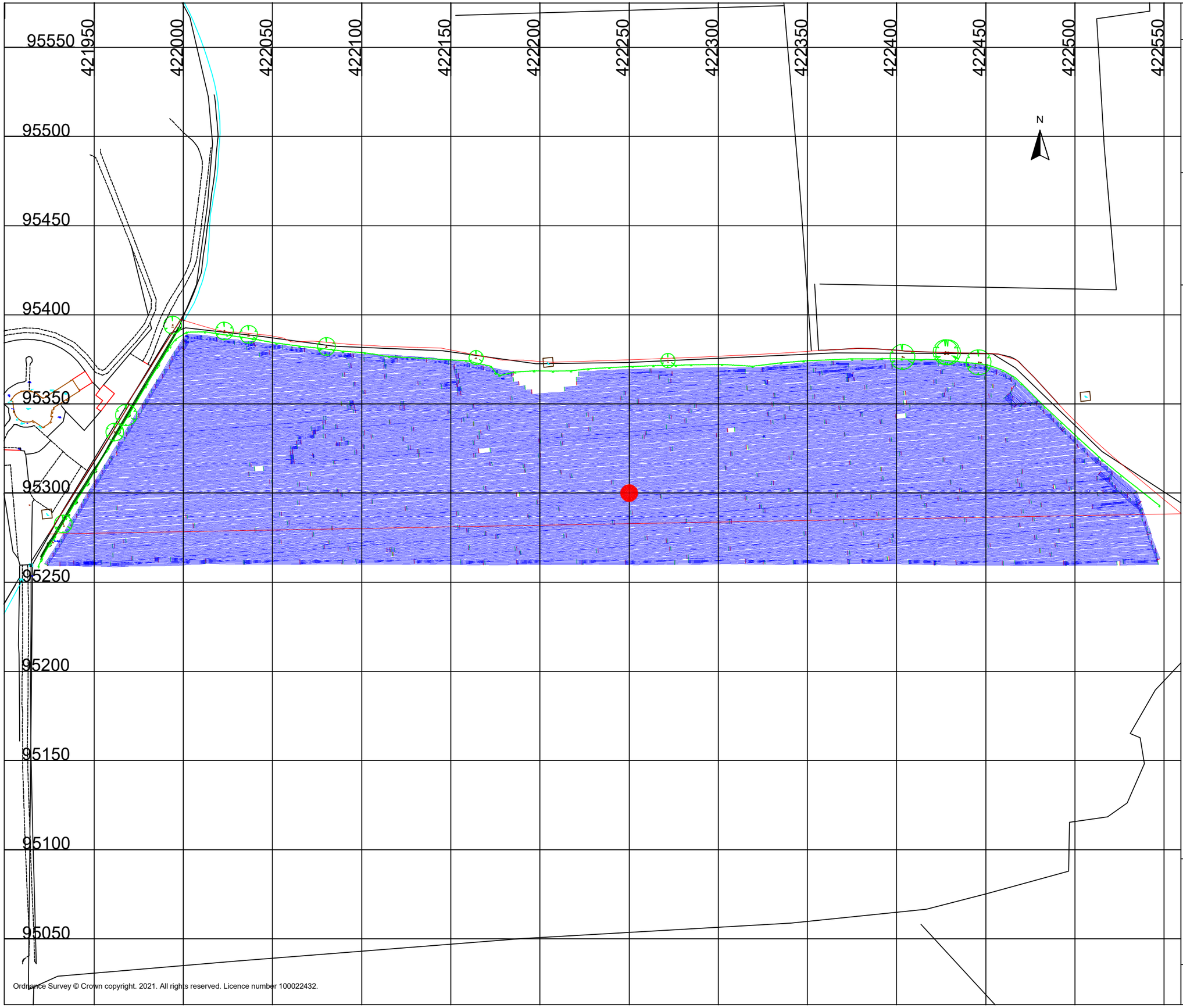
Site centred on OS NGR
SZ 22235 95315

SCALE 1:25 000

0m 500m 1000m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 01



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Referencing information

Referencing grid to OSGB36 datum at 50m intervals

- 422200 95300
- Survey tracks
- Survey track start
- Survey track stop
- Development boundary

SCALE 1:2000

0m 20 40 60 80 100m

SCALE TRUE AT A3

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Greyscale plots of magnetometer data & abstraction & interpretation of magnetic anomalies

N

Greyscale plot of minimally processed magnetometer data

+3nT
-3nT +3nT -3nT

Greyscale plot of filtered magnetometer data

+3nT
-3nT +3nT -3nT

Abstraction & interpretation of magnetic anomalies

8 14 11 2 6 7 1 13 11 5 4 3 9 10 12

- Positive linear anomaly - cut feature of archaeological potential
- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - possible ditch-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Linear anomaly - of agricultural origin
- Linear anomaly - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Discrete positive response - pit-like feature of natural origin
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:2000

0m 20 40 60 80 100m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 03

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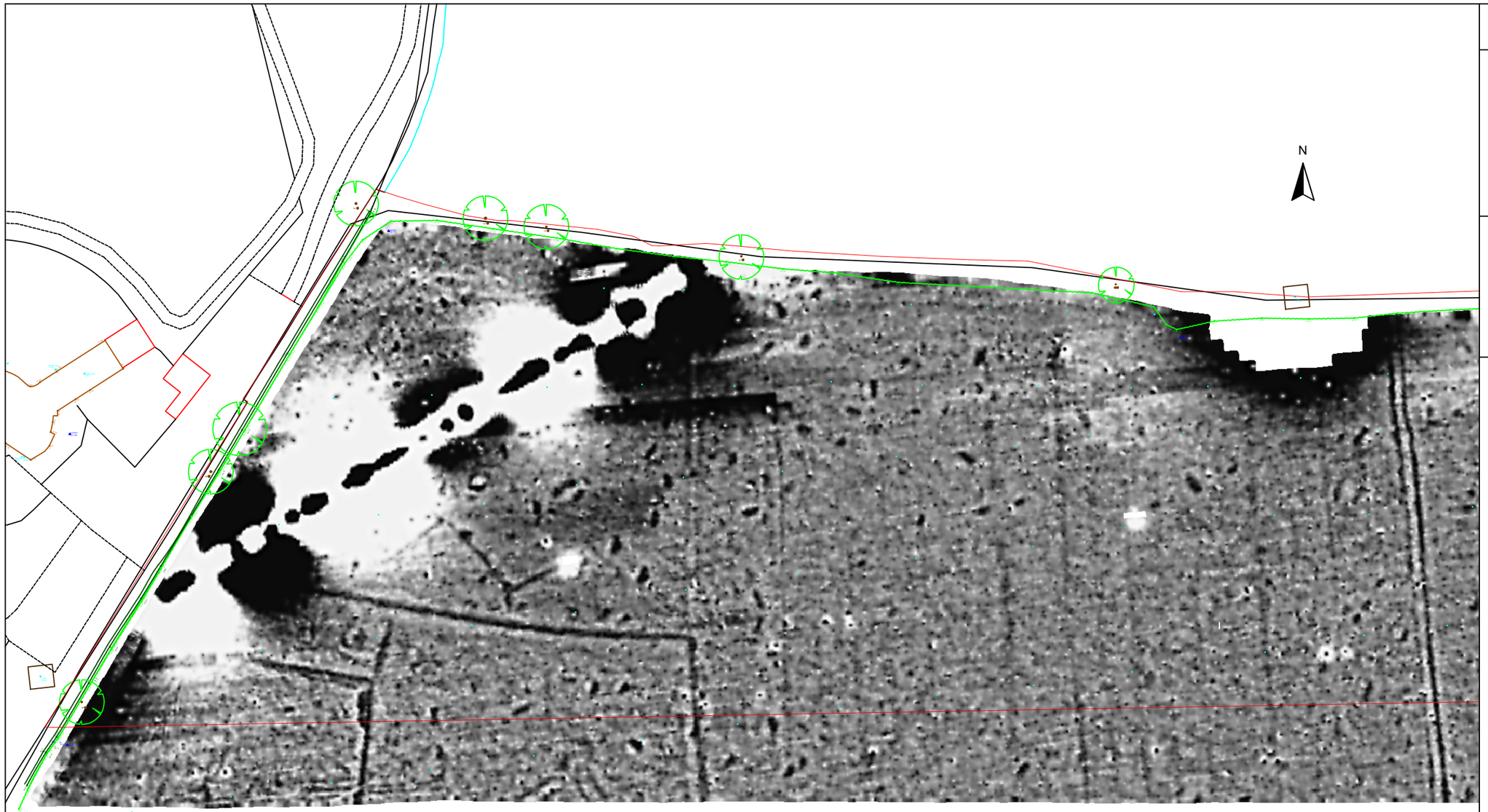
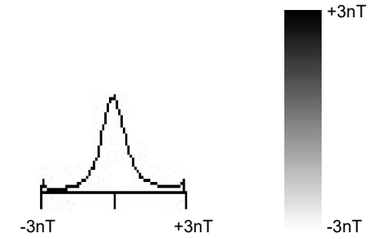
Hampshire

Greyscale plot of minimally processed magnetometer data - west





SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 04

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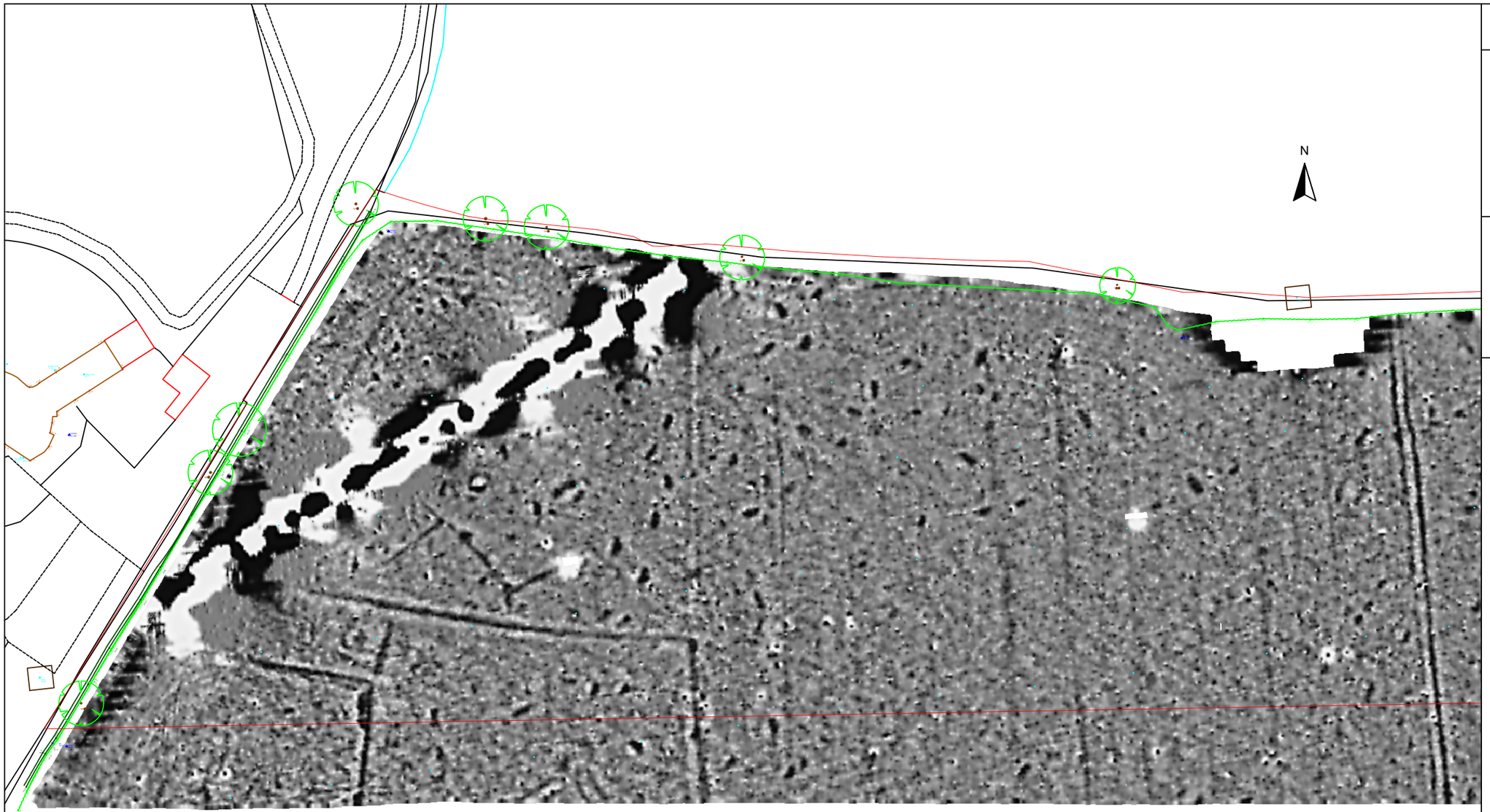
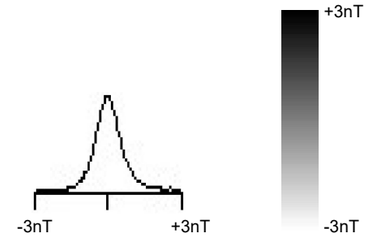
Greyscale plot of filtered magnetometer data - west





SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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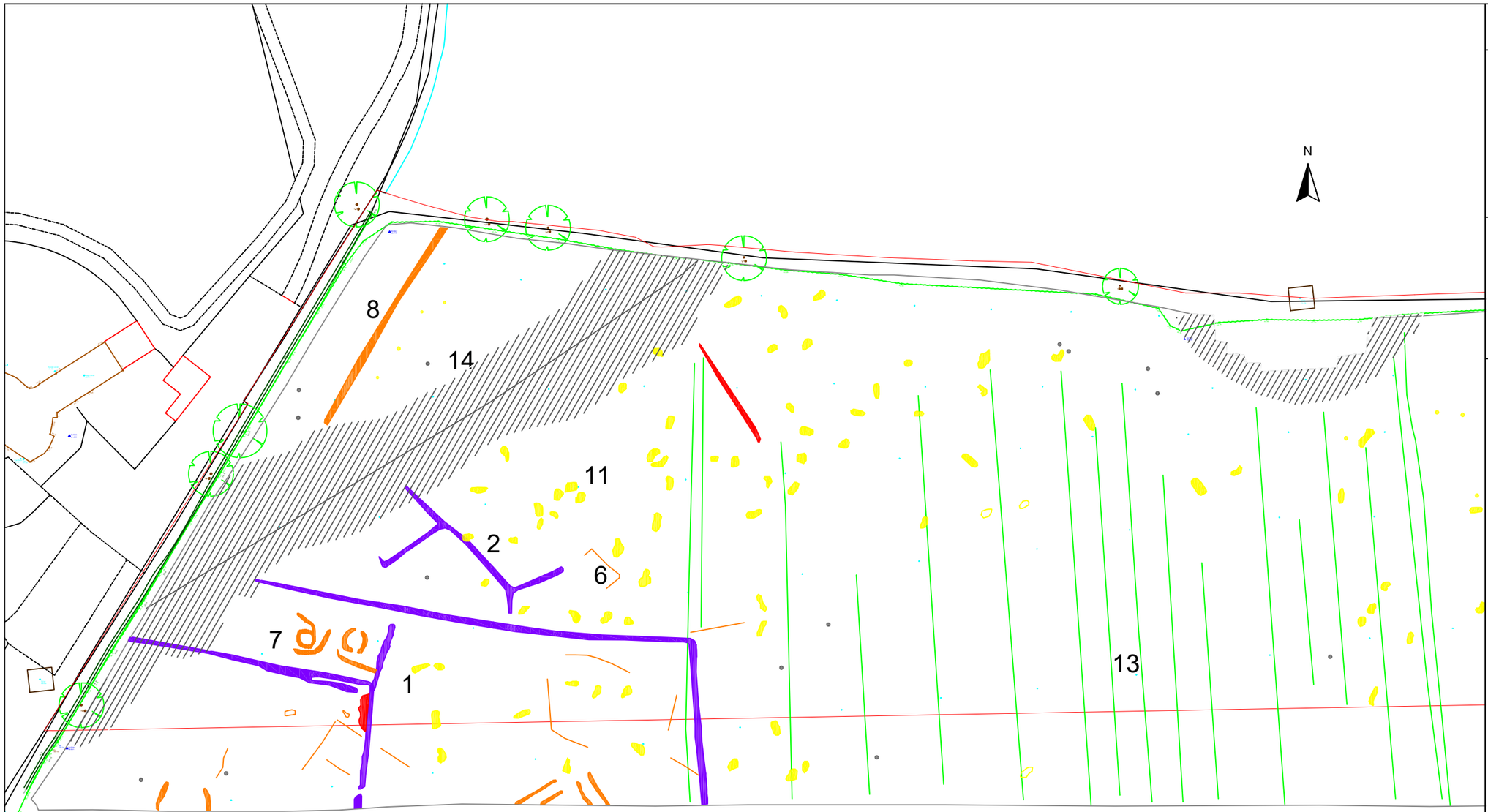
Abstraction and interpretation of magnetic anomalies - west



- Positive linear anomaly - cut feature of archaeological potential
- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - possible ditch-like feature
- Linear anomaly - of agricultural origin
- Linear anomaly - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Discrete positive response - pit-like feature of natural origin
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

DRAWN BY	CHECKED BY	
KTD	DJS	FIG 06

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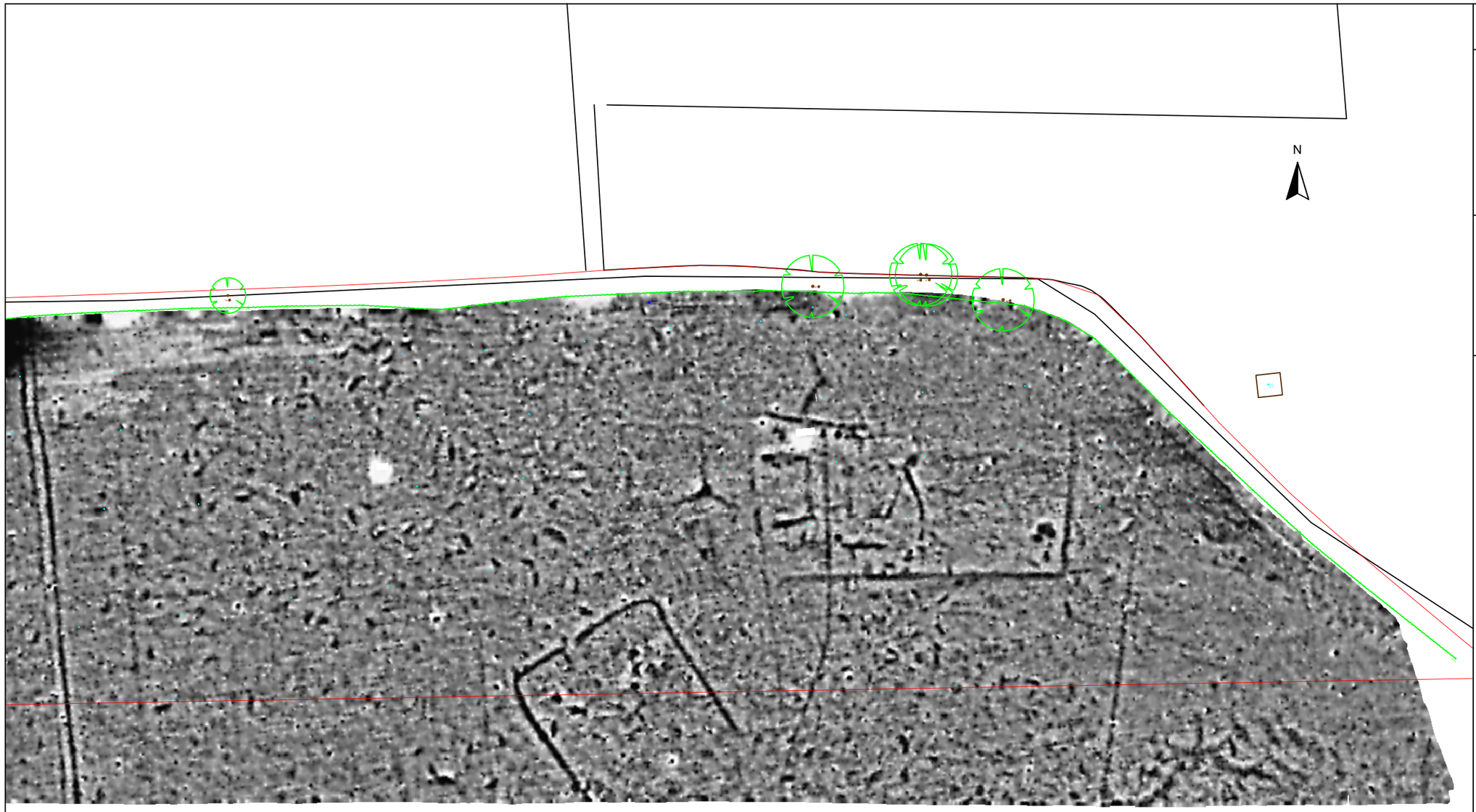
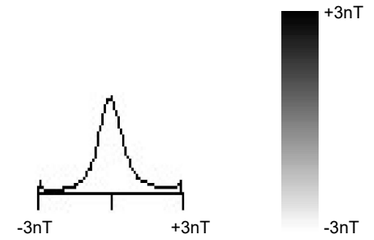
Greyscale plot of minimally processed magnetometer data - east





SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 07

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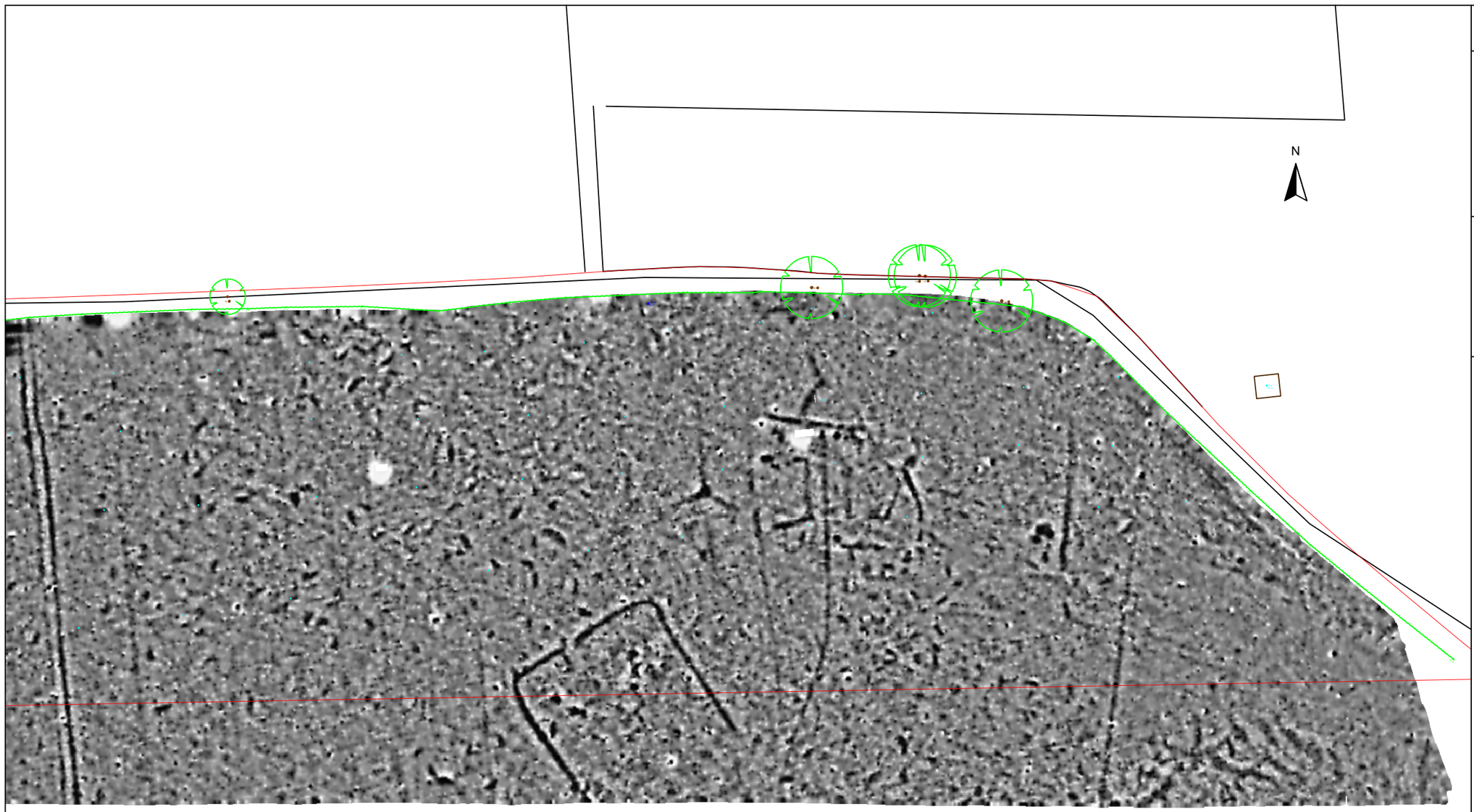
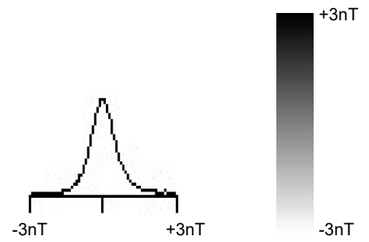
Greyscale plot of
filtered magnetometer data - east





SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 08

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Burial Ground Extension
Bransgore
Hampshire

Abstraction and interpretation of magnetic anomalies - east

N

11
5
4
9
3
10
12

- Positive linear anomaly - cut feature of archaeological potential
- Positive curvilinear/rectilinear anomaly - enclosure ditch
- Positive linear anomaly - possible ditch-like feature
- Negative linear anomaly - material of low magnetic susceptibility
- Linear anomaly - of agricultural origin
- Linear anomaly - of natural origin
- Discrete positive response - cut feature of archaeological potential
- Discrete positive response - possible pit-like feature
- Discrete positive response - pit-like feature of natural origin
- Magnetic disturbance from ferrous material
- Strong multiple dipolar linear anomaly - pipeline / cable / service
- Strong dipolar anomaly - ferrous object

SCALE 1:1000

0m 10 20 30 40 50m

SCALE TRUE AT A3

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KTD	DJS	FIG 09